PEACE/WILLISTON
FISH & WILDLIFE
COMPENSATION
PROGRAM

BC hydro

BRITISH
COLUMBIA

A Reconnaissance Survey Of Emerslund Lake (upper)

A. R. Langston and A. R. McLean
1998

PWFWCP Report No. 138

The Peace/Williston Fish & Wildlife Compensation Program is a cooperative venture of BC Hydro and the provincial fish and wildlife management agencies, supported by funding from BC Hydro. The Program was established to enhance and protect fish and wildlife resources affected by the construction of the W.A.C. Bennett and Peace Canyon dams on the Peace River, and the subsequent creation of the Williston and Dinosaur Reservoirs.

Peace/Williston Fish and Wildlife Compensation Program, 1011 Fourth Ave. 3rd Floor, Prince George B.C. V2L 3H9

Website: *www.bchydro.bc.ca/environment/initiatives/pwcp/*

This report has been approved by the Peace/Williston Fish and Wildlife Compensation Program Fish Technical Committee.

Citation: A. R. Langston and A. R. McLean. 1998. A reconnaissance survey of Emerslund Lake (upper). Peace/Williston Fish and Wildlife Compensation Program, Report No. 138. 27pp plus appendices.

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105-02891/

A RECONNAISSANCE SURVEY OF

EMERSLUND LAKE (UPPER)

WATERSHED:	Peace River/Graham River
DATE OF SURVEY:	June 20, 21, 1993
FIELD CREW LEADER:	A.R. McLean
FIELD ASSISTANT:	G. Hopcraft

PEACE/WILLISTON FISH AND WILDLIFE COMPENSATION PROGRAM

B. C. HYDRO

and

MINISTRY OF ENVIRONMENT, LANDS AND PARKS

REPORT PREPARED BY: A.R. Langston and A.R. McLean

RELEASED BY: _____

Nick Baccante, Regional Fisheries Biologist

HACKNEY
HILLS
Federal Ranch
BUTLER RIDGE
HUDSON'S HOPE
DISTRICT
MUNICIPALITY
Peace
REACH
SCALE 1: 250 000

LAKE: Emerslund (Upper) **SYSTEM NAME: Emerslund Ck.**

A.S.A.P. REFERENCE NO.: **SYSTEM NO: 230-8605-352**

DATA ON FILE FOR THIS SURVEY

Location	x	Dissolved 02/Temp. Profiles	x
Physical Data	x	Winter Dissolved 02/Temp. Profiles	--
Bench Mark	x	Netting Record	x
Terrain Features	x	Lake Catch Summary	x
Access	x	Individual Fish Data	x
Resorts and Campsites	x	Fish Preserved	--
Other Developments	x	Stomach Analysis	x
Obstructions and Pollutions	x	Scale Reading	x
Special Restrictions	x	Location of Inventory Sites	x
Aquatic Plants	x	Photograph Directory	x
Wildlife Observations	x	Appendices:	
Miscellaneous Comments	x	A: Water Chemistry Analysis	x
Lake Drainage	x	B: Tributary Stream Data	x
Fisheries Management Comments	x	Bathymetric Map Reduction	x
History of Previous Surveys	x	Bathymetric Map	x
Water Chemistry Summary	x		

LOCATION

Location: - approximately 85 km northwest of Hudson's Hope.
- approximately 140 km west of Ft. St. John.

Elevation: 930 m + /-

Latitude/Longitude: 56°23'27":123°03'33" U.T.M.: 10.4963.62494

Management Unit: 7-36 N.T.S. Map No.: 94-B/6 edition 2

Drainage:

1. Emerslund L. (Upper) --> Emerslund C. --> Emerslund L. (lower) --> Emerslund C. - Nabesche R. --> Williston Reservoir (Peace Reach) --> Peace R.
2. Approximately 1 km upstream from Upper Emerslund L. --> Unnamed C. --> Graham R. --> Halfway R. --> Peace R.

PHYSICAL DATA

Lake Drainage Area:	--	km^2	Volume:	964,000	m^3
Water Surface Area:	170,000	m^2	Flushing Rate:		
Area above 6 m contour:	84,000	m^2	Perimeter of Islands:		n/a
Shoreline Perimeter:	2,200	m	Number of Islands:		0
Maximum Depth:	11.5	m	Mean Depth:	5.7	m
Filterable Residue (TDS):	226	mg/l	Secchi Reading:	2.9	m

Sounding Device: Lowrance X-1 5 Elevation Source: Contour interpolation

BENCHMARK

(Iron spike, centre of red circle) located at the lake outlet, 1.0 m from shore in a 26 cm diameter spruce tree. Bench mark is set 2.0 m above present water level.
High water mark: 0.1 m above water level at time of survey.

TERRAIN FEATURES

Immediate Shoreline:

The lake shore slope is low with the exception of the moderate to steeply sloped south side. A fringe of sedge grass fronts all but the north shoreline. Alder is also present along the shoreline with the exception of the east and southeast sides. A dense spruce tree forest, set back a few metres from the shoreline, surrounds the entire lake with the exception of the sedge grass marsh area located at the northeast corner. Shoreline substrate consists primarily of organics. Gravel and cobble substrate (covered with 2 cm of organics) was located along the east shoreline. Lake bottom drops off moderately to steeply with the exception of the low sloping northeast and southwest ends. Boating access to and from the lake is good, as a road runs along the entire north shore of the lake.

Surrounding Country:

Upper Emerslund Lake is surrounded by mountainous terrain. A small cutblock is visible to the west. A small burned treed area is also visible to the west. Forest cover is mainly coniferous species with some deciduous sparsely intermixed. Upper Emerslund Lake is located in the boreal white and black spruce biogeoclimatic zone.

ACCESS

Directions:

From Ft. St. John at the junction of 100th Avenue and Alaska Highway, proceed north approximately 82 km on the Alaska Highway and turn left onto the Upper Halfway gravel road. Proceed along the gravel road crossing the Halfway River at 56 km. Take left fork just after crossing river, right fork at 66.5 km, keep right at 82.9 km and keep right at 101.5 km. Proceed to the Graham River. Turn right and follow river upstream on private road approximately 600 m to Ottertail Guide Outfitters, located in Crying Girl Prairie. The Emerslund Lakes are approximately a 15 minute helicopter flight west from Crying Girl Prairie.

Alternately, a single lane, seasonal road in poor condition exists between Crying Girl Prairie and the Emerslund Lakes. Access by four wheel drive vehicles, ATVs, horses and snowmobiles is possible.

Road Type and Conditions:

The Alaska Highway is a paved all weather highway. The Halfway River Road is a two lane all weather gravel road in good condition. The Ottertail Guide Outfitters private road is a single lane, dirt/gravel road in fair condition.

Restrictions:

At the time of survey, only vehicles of the logging company Canadian Forest Products were allowed to travel on the seasonal road from Crying Girl Prairie to the Emerslund Lakes.

RESORTS AND CAMPSITES

None.

OTHER DEVELOPMENTS

A small dilapidated cabin is present along the south shore, near Inlet #5.

OBSTRUCTIONS AND POLLUTIONS

The beaver dams located at the lake's edge on inlet #2 and 150 m upstream from the lake on inlet #4 are barriers to upstream fish passage at the present flow regime. Numerous other beaver dams are located upstream from the lake on inlet #2, #3 and #4, some of which are barriers to upstream fish passage at present flow regimes. No barriers to downstream fish passage were observed.

SPECIAL RESTRICTIONS

None known.

AQUATIC PLANTS

None.

WILDLIFE OBSERVATIONS

1 osprey	1 moose
1 loon	1 beaver
1 kingfisher	1 eagle

MISCELLANEOUS COMMENTS

What appears to be a seismic line originates at the northeast lake shore and continues away from the lake in a northeast direction.

The Emerslund Lakes are collectively referred to as the "Two Lakes" by area residents.

BathYmetric map: The lake outline is from an enlargement of aerial photograph BC4200 No. 57. The photograph was taken in September of 1963.

LAKE DRAINAGE

General:

Upper Emerslund Lake has 5 inlets (1 intermittent). Emerslund Creek is the main tributary (inlet) of Upper Emerslund Lake. The creek drains an area southeast of the lake. Approximately 1 km upstream from the lake, Emerslund Creek becomes a low sloping marsh like meandering section of creek with a high concentration of beaver dams. Flow from this area continues westward to the lake and into an unnamed creek which flows 12.5 km north to the Graham River. The two creeks appear to have been separate at one time, but beaver activity has inundated the height of land and resulted in flows in both directions.

The outlet (Emerslund C.) flows approximately 0.6 km southwest to Lower Emerslund Lake. Emerslund Creek exits Lower Emerslund Lake and flows approximately 15 km to its confluence with the Nabesche River.

Major Systems:

None.

Minor Systems:

Unnamed C - Intermittent - Inlet #1

This meandering seasonal inlet has a complete organic substrate, affording no fisheries potential. A road crosses this inlet approximately 50 m upstream from the lake. The road is badly rutted at this point, due to inadequate drainage.

Emerslund Creek - Inlets #2, 3 and 4

The initial 200 m of these inlets were investigated. These inlets are all connected and represent a braiding of Emerslund Creek as it flows through a low gradient marsh area. Numerous beaver dams are located on these inlets, some of which are barriers to upstream fish passage at the present flow regime. No barriers to downstream fish passage were observed. These low lying meandering inlets have a complete organic substrate, affording no fisheries potential.

Unnamed C - Inlet #5

The initial 200 m of this inlet was investigated. The creek had an average wetted width of 2.3 m, average depth of 0.27 m, a gradient of 1.5%, approximately 130 m upstream from the lake. The water temperature was 5^0C. The initial 20 m of the inlet affords good spawning habitat, the remainder is fair. Good rearing habitat was also noted throughout (L.O.D., overhanging vegetation, instream vegetation, undercut banks).
See point sample card for additional information.

Emerslund Creek - outlet

The initial 200 m of the outlet was investigated. The creek had an average wetted width of 12 m, average depth of 0.4 m, and a gradient of 1 %, 130 m downstream from the lake. This section of stream has poor to fair spawning habitat (30% fines). Good rearing habitat was observed throughout (large woody debris, overhanging/instream vegetation, undercut banks).

The outlet flows approximately 600 m to Lower Emerslund Lake. Fish passage between the two lakes is unrestricted as no barriers to fish passage were observed.
See point sample card for additional information.

FISHERIES MANAGEMENT COMMENTS

Upper Emerslund Lake supports a population of bull trout and lake and mountain whitefish. Four net sets (avg. set time 1.6 hours) yielded 3 bull trout (length range 27.5 - 34.5 cm), 111 mountain whitefish and 57 lake whitefish. Longnose suckers and lake chub may be present as these fish species were netted in Lower Emerslund Lake during the same time period. The gill nets were set for short periods so as to minimize the impact on bull trout, allowing for live release once sampled. One netted lake whitefish was aged at 12+ years. Inlet #5 afforded good spawning habitat. Both Inlet #5 and the outlet provide good rearing habitat. Numerous beaver dams are located on inlets #2, 3 and 4, some of which are barriers to upstream fish passage at present flow regimes.

Upper Emerslund Lake appears to be providing an adequate fishery for bull trout and whitefish. The local guide outfitter, based in Crying Girl Prairie indicated that low angling pressure was being exerted on the Emerslund Lakes in the summer and winter.

HISTORY OF PREVIOUS SURVEYS

Lake Surveys:

None known.

Other Related Surveys:

None known.

WATER CHEMISTRY SUMMARY **Limnology Station No. 1**

Field Conditions

Date:	June 21, 1993		
Time:	1715 hrs	Air Temperature:	10°C
Wind Velocity:	2 km/hr	Wind Direction:	northeast
Cloud Cover:	9/10 o.c.	Surface Condition:	light ripple
Secchi Disc:	2.9 m	Water Colour:	clear

Method(s) Used:

Dissolved Oxygen:	YSI model 58 oxygen/temperature meter
Water Temperature:	YSI model 58 oxygen/temperature meter
Air Temperature:	Hand-held alcohol thermometer
pH (field):	Digital pH pocket tester
H2S (field):	Hach H2S field test kit
Laboratory Used:	Zenon Environmental Inc. B.C. Laboratory Services
Water Sampler:	Vertical Alpha Water Bottle (Vandorn)
Substrate Sampler:	Substrate sample not taken

Water Sample Chemistry: SEAM Site No.: not determined

	Sampling Depths		
	Surface (0 m)		Lower (9.0 m)
pH (field)	9.3		8.7
pH (lab)	8.4		8.1
Specific Conductance (lab)	380	µmhos/cm	420 µmhos/cm
Filterable Residue 105°C (lab)	226	mg/l	249 mg/l
H2S (field)	--	mg/l	0 mg/l
Bottom Depth:	10.3	m	
Substrate Sample Depth:			

Lake: Emerslund (Upper)

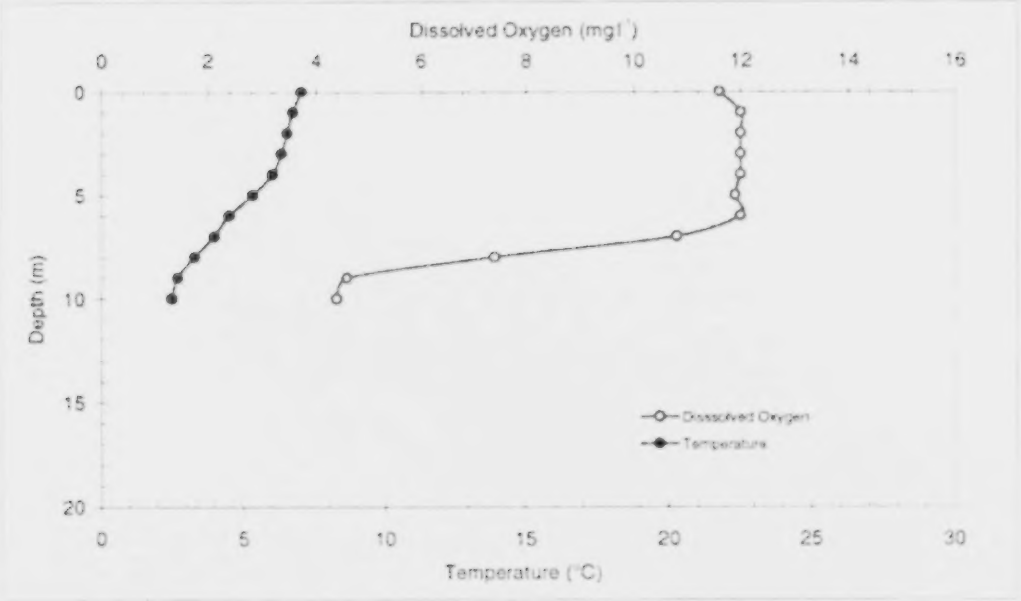
DATE: June 21, 1993

SUMMER OXYGEN/TEMPERATURE DATA

DEPTH (m)	02 (mg/l)	TEMP (°C)
Surface	11.6	7.0
1.0	12.0	6.7
2.0	12.0	**6.5**
3.0	12.0	**6.3**
4.0	12.0	6.0
5.0	11.9	5.3
6.0	12.0	4.5
7.0	10.8	4.0
8.0	7.4	3.3
9.0	4.6	2.7
10.0	4.4	2.5
10.3	bottom	

SUMMER

Dissolved Oxygen and Temperature Profiles



NETTING RECORD

Mesh sizes experimental order: 25, 76, 51, 89, 38, 64 mm

NETTING SITE #1

Type:	Sinking monofilament gill net		
Date Set:	June 20, 1993	Time:	1845 hrs
Date Lifted:	June 20, 1993	Time:	2030 hrs
Net Dimensions:	Length: 91.4 m	Depth:	2.4 m
Shallow End Mesh Size:	25 mm	Depth:	1.0 m
		Substrate:	organics
Deep End Mesh Size:	64 mm	Depth:	8.5 m
		Substrate:	?

NETTING SITE #2

Type:	Sinking monofilament gill net		
Date Set:	June 21, 1993	Time:	0830 hrs
Date Lifted:	June 21, 1993	Time:	1000 hrs
Net Dimensions:	Length: 91.4 m	Depth:	2.4 m
Shallow End Mesh Size:	25 mm	Depth:	1.0 m
		Substrate:	organics
Deep End Mesh Size:	64 mm	Depth:	8.5 m
		Substrate:	?

NETTING SITE #3

Type:	Sinking monofilament gill net		
Date Set:	June 21, 1993	Time:	1030 hrs
Date Lifted:	June 21, 1993	Time:	1200 hrs
Net Dimensions:	Length: 91.4 m	Depth:	2.4 m
Shallow End Mesh Size:	25 mm	Depth:	1.0 m
		Substrate:	organics/gravel
Deep End Mesh Size:	64 mm	Depth:	9.0 m
		Substrate:	organics

NETTING SITE #4

Type:	Sinking monofilament gill net		
Date Set:	June 21, 1993	Time:	1245 hrs
Date Lifted:	June 21, 1993	Time:	1430 hrs
Net Dimensions:	Length: 91.4 m	Depth:	2.4 m
Shallow End Mesh Size:	25 mm	Depth:	1.0 m
		Substrate:	organics/gravel
Deep End Mesh Size:	64 mm	Depth:	9.0 m
		Substrate:	organics

Lake: Emerslund **(Upper)**

LAKE CATCH SUMMARY

SPECIES	NET SITE NO.				ANGLED	OTHER	TOTAL	NUMBER SAMPLED	NUMBER PRESERVED	SIZE RANGE (cm)
	1	2	3	4						
mountain whitefish	20	7	33	51	0	0	111	17	0	13 - 32.5
lake whitefish		7	22	28	0	0	57	6	0	25.5-42.5
bull trout		2	1		0	0	3	3	0	27.5- 34.5

Minnow Traps:

BAIT: Sardines

#	HOURS	DEPTH (m)	SUBSTRATE	SPECIES	SIZE RANGE (cm)
1	13.80	0.4	organics	nil	
2	30.00	0.7	organics	nil	

INDIVIDUAL FISH DATA

Lake: Upper Emerslund

Date Captured: June 20, 21, 1993

Method of Capture: Sinking monofilament gill net

M - Male
F - Female
? - Not Obvious

IMM - Immature
MG - Maturing
MT - Mature
GV - Gravid
SP - Spent
? - Not Obvious

EG - Egg
FR - Fin Ray
HD - Head
ML - Milt
OT - Otolith

SC - Scale
ST - Stomach
TG - Fish Tag
WF - Whole Fish

SPECIES	Fork Length (cm)	Weight (grams)	Sex	Gonadal Maturity	Sample Type	Age (yr)	Plankton	Stomach Contents			COMMENTS
								Insects	Fish	Other	
bull trout	27.5	142			OT	4+			whitefish		
bull trout	33.0	225	F	MG	OT	6+				tapeworms	
bull trout	34.5	312	F	MG	OT	6+		larvae		clams	
mountain whitefish	13.0				SC	2+					
mountain whitefish	13.0				SC	2+					
mountain whitefish	14.0				SC	2+					
mountain whitefish	18.0	57			SC	2+					
mountain whitefish	21.0	85			SC	3+					
mountain whitefish	22.0	113			SC	3+					
mountain whitefish	22.5	397			SC	7+					
mountain whitefish	22.5	142			SC	3+					
mountain whitefish	23.0	113			SC	5+					
mountain whitefish	24.0	142			SC	6+					
mountain whitefish	24.5	142			SC	6+					
mountain whitefish	29.5	284			SC	6+					
mountain whitefish	31.0	312	M	MG	SC	7+					stomach empty
mountain whitefish	32.5	340	F	MG	SC	7+		larvae			
mountain whitefish	32.5	369			SC	6+					
mountain whitefish	35.0	483	F	MT	SC	7+				clams	
lake whitefish	25.5	142			SC	7+					
lake whitefish	29.0	225	M	MG	SC	6+		aquatic insect larvae			
lake whitefish	31.5	312			SC	8+					
lake whitefish	32.0	397			SC	8+				organic ooze	
lake whitefish	32.0	369	M	MG	SC	6+		aquatic insect larvae		clams	
lake whitefish	42.5	1000	M	MT	SC	12+				clams	

AGE DETERMINATION COMPLETED BY:
MARGARET MACDONALD

PHOTOGRAPH DIRECTORY

Negative #	Plate #	Description
RL1 :18A	1	Aerial view of Upper Emerslund Lake looking northeast. The arrows indicates the location at which the flow direction splits.
RL4: 9A,10A	2	Panoramic view looking west, taken from middle of the lake.
RL3: 25	3	View upstream at point sample site #1 on inlet #5, taken approximately 130 m upstream from the lake.
RL4: 1 A	4	View downstream at point sample site #1 on inlet #5, taken approximately 130 m upstream from the lake.
RL4: 2A	5	View upstream at inlet #5, taken approximately 8 m upstream from the lake.
RL4: 3A	6	View downstream at inlet #5, taken approximately 8 m upstream from lake.
RL3: 12	7	View upstream at inlet #2, taken approximately 120 m upstream from the lake. This habitat is similar to that of inlet #3 and #4.
RL1: 19A	8	Aerial view at creek connecting Upper (right) an Lower (left) Emerslund Lakes.
RL4: 5	9	View upstream at point sample site #1 on the outlet, taken approximately 130 m downstream from the lake.
RL4: 6A	10	View downstream at point sample site #1 on the outlet, taken approximately 130 m downstream from the lake.
RL3: 17	1 1	Bull trout (33 cm/225 g) netted in Upper Emerslund Lake.
RL3: 16	12	Lake whitefish (upper) and mountain whitefish (lower) netted in Upper Emerslund Lake.

Plate 1: Aerial view of Upper Emerslund Lake looking northeast. The arrows indicates the location at which the flow direction splits.

Lake: Emerskund (Upper)

Plate 2: Panoramic view looking west from middle of the lake.

Lake: **Emerslund (Upper)**

Plate 3: View upstream at point sample site #1 on inlet #5, taken approximately 130 m upstream from the lake.

Plate 4: View downstream at point sample site #1 on inlet #5, taken approximately 130 m upstream from the lake.

Plate 5: View upstream at inlet #5, taken approximately 8 m upstream from the lake.

Plate 6: View downstream at inlet #5, taken approximately 8 m upstream from the lake.

Plate 7: View upstream at inlet #2, taken approximately 120 m upstream from the lake. This habitat is similar to that of inlet #3 and #4.

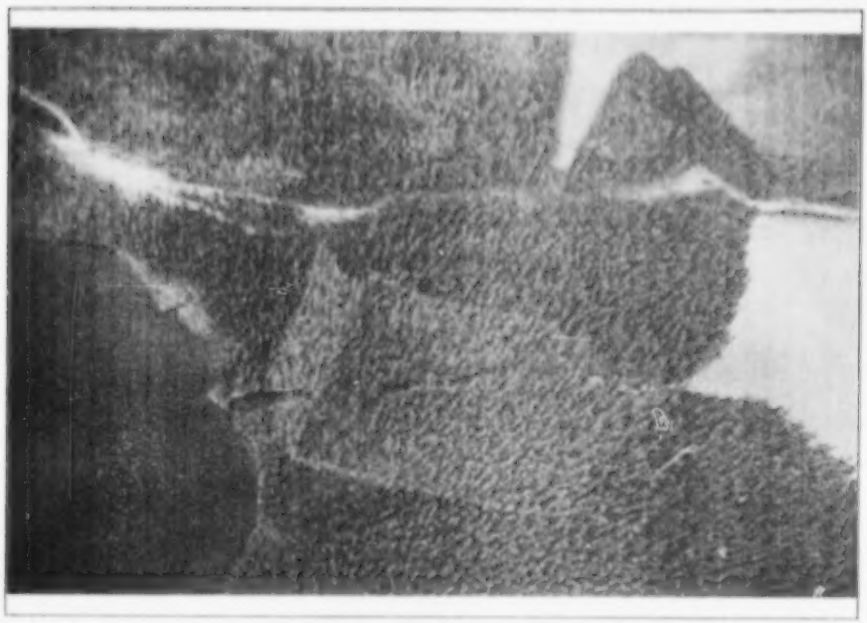


Plate 8: Aerial view at creek connecting Upper (right) and Lower (left) Emerslund Lakes.

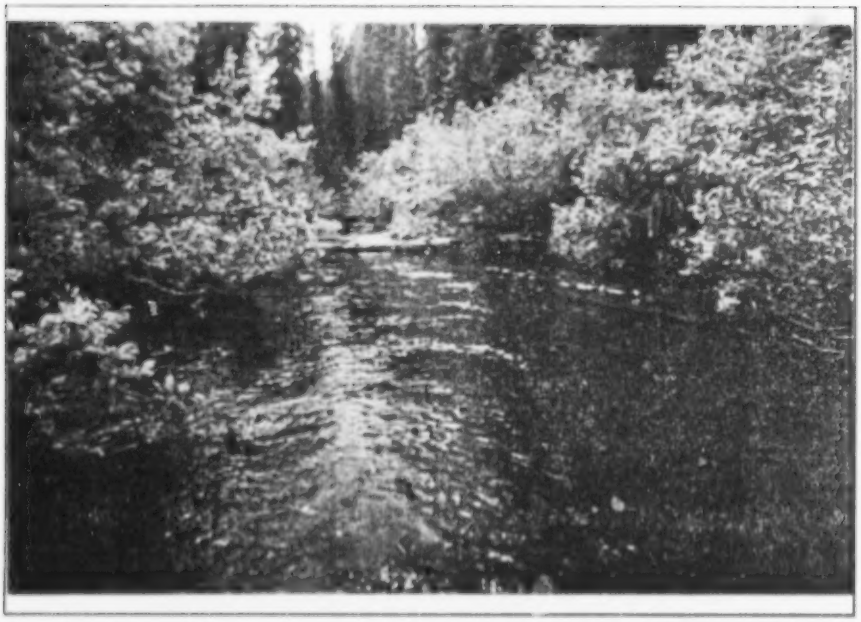


Plate 9: View upstream at point sample site #1 on the outlet, taken approximately 130 m downstream from the lake.

Plate 10: View downstream at point sample site #1 on the outlet, taken approximately 130 m downstream from the lake.

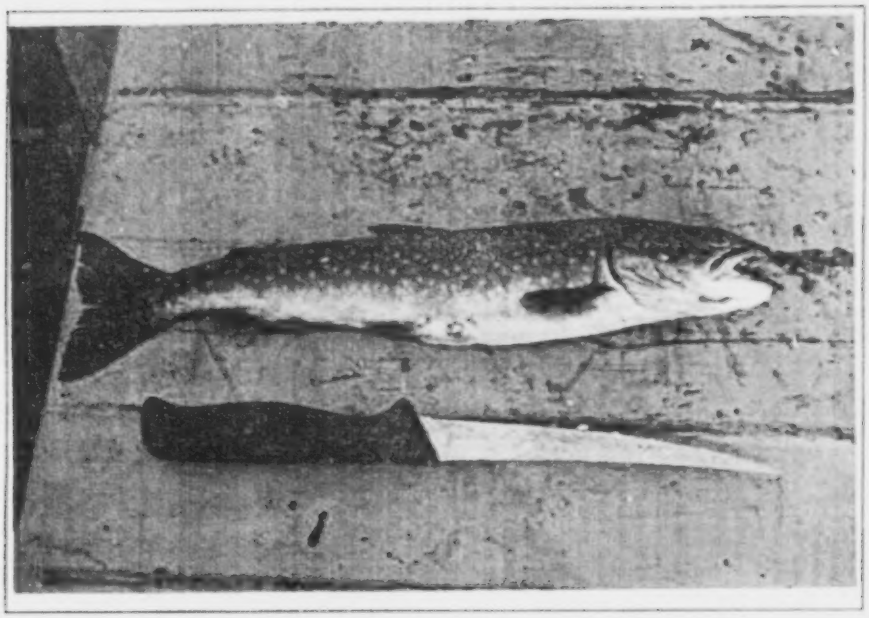


Plate 11: Bull trout (33 cm/225 g) netted in Upper Emerslund Lake.

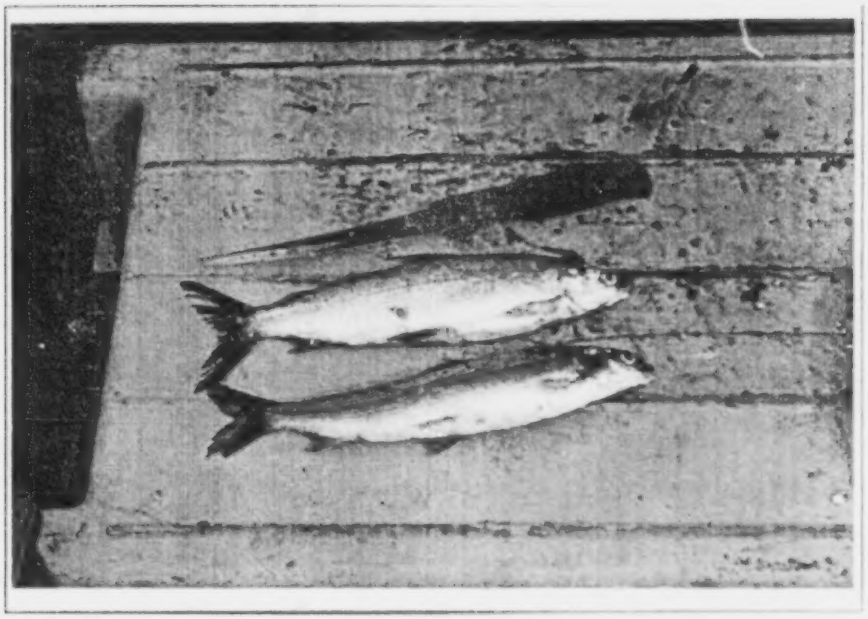


Plate 12: Lake whitefish (upper) and mountain whitefish (lower) netted in Upper Emerslund Lake.

Appendix A

LABORATORY REPORT

Water Chemistry Analysis

ZENON ENVIRONMENTAL LABORATORIES

Certificate of Analysis

Reported To

FISH - PRINCE GEORGE Client Code BD

Waste Management Branch
Northern Region
3rd Floor, 1011 4th Avenue
Prince George, BC V2L 3H9

Submitted By : ARNE LANGSTON
FAX : FISH AND WILDLIFE

Requisition Forms

	Zenon ID
Form 10016183 received on 23-JUN-1993 completed on 15-JUL-1993 containing sample(s)	93012801 93012802

From sampling site NOSITE UPPER EMERSLUND LK

Remarks

- All results are blank corrected except for Hi-Res MS data.
- 'MDC' = Minimum Detectable Concentration
- '<' = Less than MDC
- '---' = Not analyzed
- Solids results are based on dry weight except Volatile Organics, TPH and Biota Analyses.
- Organic analyses are not corrected for surrogate recoveries except for Isotope Dilution methods.

Methods used by Zenon are based upon those found in 'Standard Methods for the Examination of Water and Wastewater', 17th Edition, published by the American Public Health Association, 1015 Fifteenth Street, NW, Washington, DC 20005, or on US EPA protocols found in the 'Test Methods For Evaluating Solid Waste, Physical/Chemical Method, SW846', 3rd Edition. Other procedures are based on methodologies accepted by the B.C. Ministry of Environment.

ANALYTICAL REPORT
Form 10016183

Sampling site : NOSITE UPPER EMERSLUND LK
Submitted by : ARNE LANGSTON

Zenon ID : 93012801

Sparcode	Parameter		Unit	MDC	Media	Workroute
00041220	pH	8.4	pH units	1.0	02/01	Automated pH Meter
00111160	Specific Conductance	380	uS/cm	1	02/01	Cond. Meter Siebold
00081071	Residue Nonfilt.	< 4	mg/L	4	02/01	Grav; Subsamp Buch 105C
007H1033	Res. Filterable 1.Ou	226	mg/L	4	02/01	Grav 1.0 um Filter
01021210	Alkalinity Total 4.5	183	mg/L	0.5	02/01	Automated Electrometer

Sample State : Fresh Water
Sampled on : 93/06/21 00:01

ANALYTICAL REPORT
Form 10016183

Sampling site : NOSITE UPPER EMERSLUND LK
Submitted by : ARNE LANGSTON

Zenon ID : 93012802

Sparcode	Parameter		Unit	MDC	Media	Workroute
00041220	pH	8.1	pH units	1.0	02/01	Automated pH Meter
00111160	Specific Conductance	420	uS/cm	1	02/01	Cond Meter Siebold
00081071	Residue Nonfilt.	< 4	mg/L	4	02/01	Grav; Subsamp Buch 105C
007H1033	Res. Filterable 1.Ou	249	mg/L	4	02/01	Grav 1.0 um Filter
01021210	Alkalinity Total 4.5	202	mg/L	0.5	02/01	Automated Electrometer

Sample State : Fresh Water
Sampled on : 93/06/2100:02
Upper Depth : **9.0**
Lower Depth : **9.0**

DETAILED BILLING
Form 10016183

Sparcode or PKG	Parameter	Secop	Operation	WKU	P (Regula	#of test	Total-per-item WKU	Cost
00041220	pH	4401	pH Meter	3	$3.86	YY....2	6	$7.71
00111160	Specific Conductance	4404	Cond.Meter Siebold	5	$6.43	YY....2	10	$12.85
00081071	Residue Nonfilt.	4424	Grav. Buch. 9cm 105	14	$17.99	YY....2	28	$35.98
007H1033	Res. Filterable 1.0u	4429	Filt 1.0u Grav 105(	14	$17.99	YY....2	28	$35.98
01021210	Alkalinity Total 4.5	4402	Auto.Pot.Tit.St.Aci	11	$14.13	YY....2	22	$28.27
			Total for form 10016183 i				94	$120.79

Client code BD : FISH - PRINCE GEORGE
Client type : Ministry contract.
Sampling Site : NOSITE UPPER EMERSLUND LK
Submitted by : ARNE LANGSTON

This form, entered on 23-JUN-1993 12:41 has been completed on 15-JUL-1993 00:13
The following records have been entered in the charging file

93-07-15 3R1 BD $120.79 Form 10016183 94 44 - For General Service

Appendix B

TRIBUTARY STREAM DATA

Lake: Emerslund **(Upper)**

System Name: Unnamed C. **Inlet #5**

System No.: --

Site **Location:** Sample site #1, located approximately 130 m upstream of lake.

Date:	June 21, 1993	Time:	1400 hrs
Channel Width:	2.3 m	Water Temp.:	5°C
Wetted Width:	2.3 m	Stage (flow):	high
Max. Depth:	30 cm	Velocity:	0.78 m/sec
Avg. Depth:	27 cm	Field Gradient:	1.5%
Turbidity:	30 cm	Colour:	clear

Flood Signs:
Height: 31 cm

Type: organic debris

Substrate Breakdown:

Fines	Small Gravel	Large Gravel	Cobble
10%	7 %	8 %	55%

Boulder	Bedrock
20%	0%

Substrate Compaction: loose Sand: 10%

Banks:

	Form	**Height**	Stability
Right	repose	0.35 m	stable due to rooted vegetation
Left	straight	0.28 m	stable due to rooted vegetation

Comments:

the initial 200 m of this inlet was investigated.
field gradient and velocity measured over 10 m.
good spawning habitat in initial 20 m, remainder is fair.
good rearing habitat throughout (L.O.D., overhanging/instream vegetation, undercut banks).

Lake: **Emerslund (Upper)**

System Name: **Emerslund C.** **Outlet**

System No.: 230-8605-352

Site Location: Sample site #1, located approximately 130 m downstream from the lake.

Date:	June 21, 1993	Time:	1617 hrs
Channel Width:	12 m	Water Temp.:	8.5°C
Wetted Width:	12 m	Stage (flow):	high
Max. Depth:	65 cm	Velocity:	0.63 m/sec
Avg. Depth:	40 cm	Field Gradient:	1%
Turbidity:	65 cm	Colour:	clear

Flood Signs:

Height: 40 cm

Type: organic

Substrate Breakdown:

Fines	Small Gravel	Large Gravel	Cobble
30%	17 %	3 %	50%

Boulder	Bedrock
0%	0%

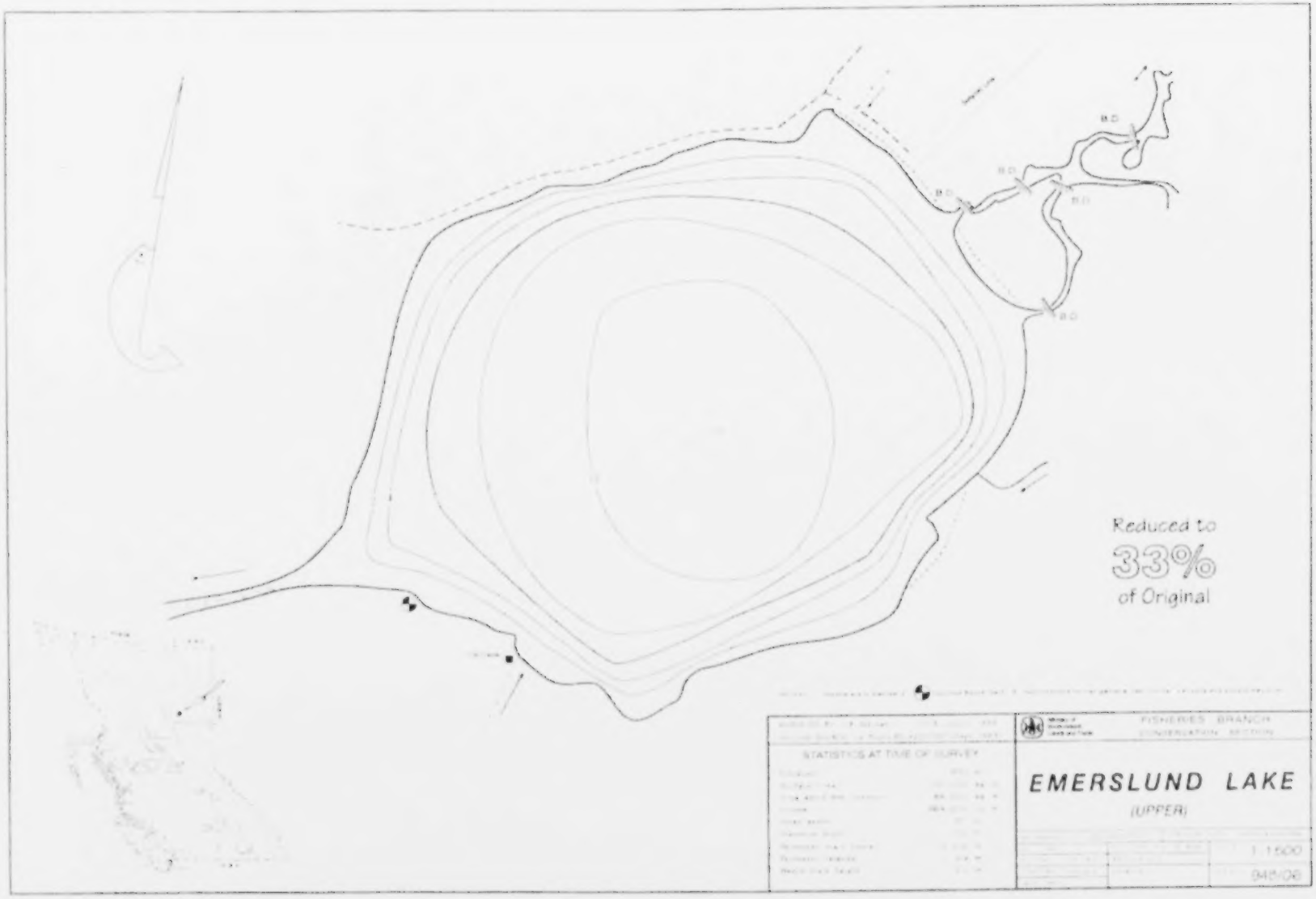
Substrate Compaction: loose Sand: 5%

Banks:

	Form	Height	Stability
Right	straight	0.8 m	stable due to rooted vegetation
Left	straight	0.6 m	stable due to rooted vegetation

Comments:

the initial 200 m of this outlet was investigated.
field gradient and velocity measured over 10 m.
poor to fair spawning habitat, 30% fines content.
good rearing habitat throughout (L.O.D., overhanging/instream vegetation, undercut banks).


B.D.
B.D.
B.D.
B.D.
B.D.
Reduced to
33%
of Original
STATISTICS AT TIME OF SURVEY
FISHERIES BRANCH
CONSERVATION SECTION
EMERSLUND LAKE
(UPPER)
1:1500
MB/06